



# The Tasmanian Geologist

**April 2019**

*Join us for these future meetings*

**23<sup>rd</sup> of May Professor Andrew Gleadow**  
*speaking about dating Aboriginal Art*  
*across Australia.\**

**27<sup>th</sup> June Annual General Meeting and Prizes**  
*night.*

**14<sup>th</sup> of July Inaugral joint meeting with the**  
*Royal Society of Tasmania, Northern*  
*Chapter. QVMAG Inveresk. Flood and*  
*Flood modelling speaker Dr Claire Kain*

*August Annual Dinner details coming soon*

*\*Andrew Gleadow is a high profile speaker,*  
*so this presentation will be open to a wider*  
*audience and is now separate from the AGM*



**NEXT MEETING:**

**Thursday 11th**  
**April**  
**6:00 PM**

**Speaker**

**Matthew McDowell**

**Fossil mammal responses to**  
**climate change and**  
**isolation in Tasmania, a**  
**land-bridge island**

Geology Lecture Theatre,  
University of Tasmania

Join us for drinks and nibbles from 5:30 onwards

## NEXT MEETING:

### **Fossil mammal responses to climate change and isolation in Tasmania, a land-bridge island**

Islands are increasingly being used as conservation areas to protect threatened native species from habitat destruction, depredation by, and competition with, exotic species. However, mammals frequently have higher extinction rates on islands compared with the adjacent mainland. Therefore, understanding island extinctions is critical for biodiversity conservation. I'm studying Tasmania's fossil record to understand why its species diversity is lower than the mainland. About 43,000 years ago lower ice age sea-levels exposed Bass Strait, creating a land-bridge between Tasmania and mainland Australia. Mainland mammals are expected to have colonised Tasmania, but several southern Victorian species apparently failed to make the journey. Were they extirpated following: the arrival of indigenous Australians; loss of megafauna; the Last Glacial Maximum, European colonisation, or were they never here? To find out, I'm studying fossil assemblages from Tasmania, the Bass Strait and Victoria to investigate just how close some mammals came to colonising Tasmania.

**Matthew McDowell** did his undergraduate studies at Flinders University in geology and conservation biology. He went on to complete a PhD at the same university using the fossil record to understand how mammals on Kangaroo Island responded to climate change driven sea-level rise and isolation over the last 130,000 years. He has worked at the South Australian Museum and with the SA and WA governments collecting, identifying and interpreting fossils. As part of a post-doctoral fellowship, Matthew studied 200,000–1 million years old small mammal fossils from the Thylacoleo Caves on the Nullarbor Plain. This work was further enabled by an



Endeavor fellowship that allowed him to spend 6 months in America studying fossils from the Nullarbor held by the Field Museum of Natural History in Chicago and the Texas Memorial Museum in Austin. He is currently at the University of Tasmania pursuing questions regarding the pre-European fauna of Tasmania, the Bass Strait Islands and Victoria to learn why 16 species of mammal that live in southern Victoria do not live in Tasmania, despite abundant suitable habitat (e.g., the introduced sugar glider) and a land-bridge that connected Tasmania to the mainland for over 30,000 years.

## PREVIOUS MEETINGS

**Joint GSA-ASEG meeting March 21<sup>st</sup> Paul Winberry How much, how fast, Seismology's role in understanding the future of Antarctica's ice sheets.**

GSA members and friends were treated to an excellent talk on the icy southern continent on 21 March by Dr Paul Winberry (Central Washington University). Paul's talk entitled "How much? How fast? Seismology's role in understanding the future of Antarctica's ice sheets" gave an insightful introduction into the monitoring and measurement of ice flow and discharge into the ocean. He stressed that despite images in the popular press of a soggy landscape, Antarctica isn't "melting" due to a warming atmosphere. Unlike the Greenland ice sheet (which is increasingly covered in surface melt), the Antarctic ice sheets are predominately losing mass through interaction with upwelling warm ocean currents attacking the ice edge from below. This process causes the grounding lines to retreat,

and the glaciers to speed up, with the ice loss contributing to rising sea levels. Paul demonstrated how seismology is used to explore the base of ice sheets, and the shapes of ocean cavities underneath large glaciers, both crucial datasets for ice sheet and ocean models. We were also treated to a field trip to the Totten Glacier in East Antarctica, where Paul has been working for several year together with the Australian Antarctic Program as part of the Totten Glacier Ice Dynamics and Evolution (TiDE) program – see this site for some fantastic science snap shots:

<https://twitter.com/tideexpedition?lang=en>



*Matt Cracknell thanks Paul Winberry*

Jacqueline Halpin

**15<sup>th</sup> of March is TRIASSIC NIGHT at TMAG**



The event put on by TMAG and Beaker Street was an adult event. It allowed participant to visit the Dinosaur rEvolution exhibition and have all the fun of digging up the fossils and doning dinosaur suits without the competition for these activities from children during normal exhibition hours. There were several options in strange-looking Triassic-themed cocktails and 20-minute talks. Brittany Trubody showed how meteorites impact Earth and may have killed off the dinosaurs, the Triassic in Tasmania and where to look for Dinosaurs was presented by Phil Sansom and Clive Calver and Karin Orth presented the adult-themed Dinosaur sex and reproduction. David Shering went through the process of creating an augmented reality Psittacosaur,

There were also fossils under the microscope and a Dinosaur Dance competition. Lots of fun. Congratulations to Margot Adler and her team for getting this event organised. Keep an eye out for the next Beaker St event later in the year.



*Above: Phil Sansom starting his talk.*

You can look at a fun summary video of the night [here](#)



*Karin Orth entertaining the crowd (photo Grace Cumming).*

### **The Hobart and Devonport Gem and Mineral Shows**

On the 16-17th March the annual Hobart Gem Mineral & Fossil Show was held at the Hobart showgrounds, Glenorchy, Tasmania. The show is an annual event presented by the Lapidary Club of Tasmania. Mineral Resources had their usual table there, selling MRT geology and gem books, maps and fossicking licences, plus answering questions and, perhaps most time consuming, identifying minerals and rocks. There is a lot of interest out there in the broad public, not just in gems but also minerals, fossils and geology in general. We also get to meet some great characters. One of the most interesting stones brought in was a large sapphire from NE Tasmania, with a pink triangular core of ruby!

We also sold several copies of the ‘Geological Evolution of Tasmania’ (we sold out!) and even put on our UTas hat to discuss the possibilities of studying geology in Tasmania, to some younger people.

On the following weekend (23<sup>rd</sup> -24th March) we also attended the Devonport Jewellery, Gem & Mineral Fair. This event had a lower attendance but our stall still drew plenty of interest from the public (we sold about 40 geology maps!). Despite our digital age most people still prefer to go bush with a real map and book. It seems that the people in the NW have a deep interest in their local geological environment and they seem to be great at finding us and information online.

Ralph Bottrill

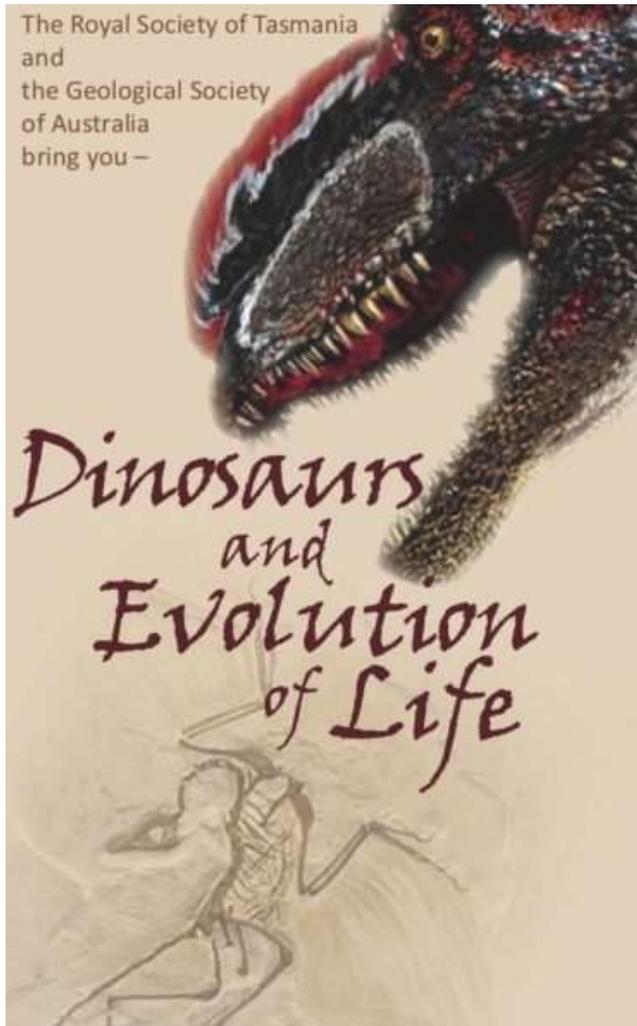


*Above and below: Devonport Jewellery, Gem & Mineral Fair*



23<sup>rd</sup> to 24<sup>th</sup> of March

## A Symposium: Dinosaurs and Evolution of Life.



There was a lot happening over the two days of the 'Dinosaurs and the evolution of Life Symposium' held at the Stanley Burbury lecture Theatre, University of Tasmania.

The four main interstate guest included world leaders in vertebrate paleontology Drs John Long, Steven Salisbury, Phil Bell and Stephen Poropat. These speakers filled in the record of Australian dinosaurs with many recent discoveries. Interestingly, much of the work has been on trace fossils in the way of trackways, rather than bone material or in unexpected places, such as the opal fields of Queensland and South Australia. As well as the tales on dinosaur discoveries in Australia, there were presentations that included dinosaur trackways in Korea, the art history of depicting dinosaurs and the influences of oxygen and

nutrient levels in the oceans on evolution and mass extinction.

As well as presentations, Rosie and Rex entertained delegates at morning tea on both days and prizes were drawn on the first morning.



*Above: Mary Beadle and Connor O'Keeffe with their prizes of the Luis Rey-illustrated dinosaur book congratulated by Rex (photo Peter McGoldrick). Below: Steve Salisbury with the largest sauropod tracks in the world.*





*Above Steve Poropat with the intact neck of a sauropod from the Winton area. Note the ossified tendons that help to support animal's long neck. Below Phil Bell showing a publicity photograph of the opalized bones of an Iguanodont at Lightning Ridge with the miner who discovered this unique fossil.*



**GSA sponsored two students to attend the two-day Symposium. Here are their impressions of the event:**

The Dinosaur Symposium was a great experience. Like most who attended, I have always been fascinated with paleontology. So, to attend was a bit of a childhood dream come true,

but it also fed my current interests in understanding past environments and tectonics, and how they relate to modern observations. As a geodesist, I am interested in how the Earth systems are changing with respect to time, and there were many talks that touched on this theme, which was exciting.

Overall, I was impressed by the array of speakers, their depth of knowledge, how well organized the event was, and the vegan and vegetarian options in the way of food. Personally, the highlight for me was learning about EarthByte/GPlates and also paleo-environments from Dr Indrani Mukherjee and her colleagues. I found Indrani's studies not only fascinating, but highly relevant to understanding the Earth projected forward in time, which pertains to all of society. This inspired me to focus more on Earth evolution as a budding geodesist.

I had such a wonderful time and I would like to thank Geological Society of Australia, Tasmania Division for the opportunity that was afforded to me. Thank you and keep up the great work.

Nathaniel Young

Thank you for your sponsorship to the Dinosaurs symposium. I am really grateful to have been part of this symposium. To be honest, I did not imagine the talks would be so diverse, despite the fact that I read the program before I went to the event. I was glad to see so many aspects of science being combined together to present a big picture, which is where to find dinosaurs and how they have evolved, survived and died. There were so many interesting parts throughout the whole event. When everyone was focusing on dinosaurs as the major evolution of life forms, fish were the actual contributors to this evolution. I could not believe that by studying fish, we can learn so much about evolution. Then, the talks about ocean chemistry and trace elements gave me another perspective of seeing the rise of evolution.

Stromatolites are living fossils and they seem insignificant but they produced oxygen that changed the atmosphere on the Earth. They are so well adapted to the changing environment that they can survive in a wide range of temperatures and in extreme environments, unlike multi-cellular organisms like us.

I was taught by Steve Salisbury that science and Aboriginal culture can connect to each other. The talks given by Brita Hansen highlighted the fact that dinosaurs have been in people's imaginations for a long, long time! The art of dinosaurs was undeniably the highlight of the second day. There were so many art pieces shown by the presenters. The augmented reality Psittacosaur was definitely one of them. In my opinion, determination and passion were the key qualities displayed by the artists and all the researchers. This is something that I would like to emulate. In summary, attending this two-day symposium was absolutely worth it! Thankyou.

Lexi Kng



*Mary Koolhof (Secretary RST) officially thanks Ross Large for his hard work in organizing the symposium and presented him with a personally sourced 'micro-dinosaur'.*

At one point there were a veritable flock of Psittacosaura invading the Stanley Burbury Theatre. Most disappeared, but one was captured and is now at TMAG at the Dinosaur rEvolution exhibition. Go and see her before the exhibition ends on the 5<sup>th</sup> of May.



*Above: Psittacosaura invade the Stanley Burbury lecture theatre thanks to the AR wizardry of David Shering.*



A collaboration between Gondwana Studios of Launceston, Royal Society of Tasmania and TMAG, this showcases some Earth Sciences and may inspire some Earth Scientists of the future. For more details head to:

[https://www.tmag.tas.gov.au/whats\\_on/exhibitions/current\\_upcoming/info/dinosaur\\_revolution\\_secrets\\_of\\_survival](https://www.tmag.tas.gov.au/whats_on/exhibitions/current_upcoming/info/dinosaur_revolution_secrets_of_survival)

### **Field Trip Autumn 2019**

To complement the 'Dinosaur and Evolution of Life Symposium' a field trip was held on 25<sup>th</sup> March to visit some of the Early Triassic vertebrate localities in the Hobart area. Six participants, ably led by Phil Sansom, enjoyed a pleasant cliff-top walk to visit one of the Conningham localities where John Cosgriff collected in the early 1970's. Despite strong winds that made access to the coastal outcrops

challenging, participants located some fragmentary bone and coprolitic material. Cross bedding in the quartz arenites was spectacular! The passage of a vigorous cold front saw participants make a rapid retreat to the comfort of a Margate café, followed by a visit to the School of Earth Sciences Museum and Rock Library where several Triassic vertebrate holotypes and tracks were viewed. Many thanks to curator Izzy von Lichten for facilitating this at short notice.

The last site of the day was Old Beach vertebrate fossil locality. Again, some fragmentary bone material was discovered within a clay-pellet conglomerate bed. Depositional features and a noticeable mica component within the quartz arenites are of interest at this locality.

**Advance notice: Phil intends to lead another Triassic-themed field trip to the Tasman Peninsula in October, final date still to be decided.**

Phil Sansom

### **Science in the Pub becomes Science in the Park**

On March 31<sup>st</sup>, on a cool fine Sunday afternoon, Tolosa Park became a hive of activity for enquiring minds of all ages. Several hundred people (mostly family groups) attended the first ever Hobart Science in the Park event. Activities included bottle rockets, DNA extraction, nature walks, bones and fossils, bush tucker, a fabric human body and much more. The GSA's own Dr Peter led walks along the Lime Kiln Trail to find fossil from the Permian Period. A great time was had by all, and Emily Flies, Marion Charlier and their committee deserve a big 'thank you'.

Science in the Park is back to being Science in the Pub form now on. These are adult events held regularly at the Republic Bar upstairs room. Check out their Facebook page or website ([scipubtas.org](http://scipubtas.org)) for upcoming talks. The topic for the next meeting (Thursday 6<sup>th</sup> April) is Sex!



Peter McGoldrick

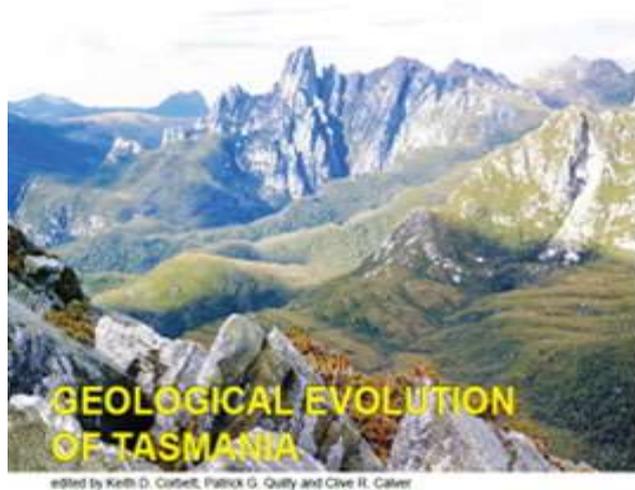
### **Student Members**

Students members are important to us. Many of you become members through the "The Geological Evolution of Tasmania" book special (see below if you are interested in this). But there are many more benefits to membership. Here are some comments from Sarah Gilmour, who completed Honours in 2018 and is now employed by GHD in Hobart. She was awarded \$1000 from the GSA Endowment Fund for her Honour's work in 2018.

"I have my memberships listed on my resume, including how long I have been a member, It's also something my new job has asked me to put on my work profile. It's a great thing to have on a resume if you are young and don't have much experience. It shows to employers that you take an interest in your field and also can provide opportunities through your degree"



Sarah Gilmour



The flagship publication of the Tasmanian Division of the GSA, "The Geological Evolution of Tasmania" (Special Publication 24 of the GSA) is available for ordering. All details are available on a specific part of the Utas CODES web site: [http://www.utas.edu.au/\\_data/assets/pdf\\_file/0003/55313/Flyer\\_Order.pdf](http://www.utas.edu.au/_data/assets/pdf_file/0003/55313/Flyer_Order.pdf)

Copies of the book can be obtained personally from Deborah Macklin or Caroline Mordant ([publications@CODES.utas.edu.au](mailto:publications@CODES.utas.edu.au) or phone on +61 3 6226 7537 (Thursday morning only)).

Members Price is A\$90 + GST + postage where appropriate. Postage can be avoided by buying in person from Deborah Macklin in Earth Sciences (University of Tasmania). The book is also available at Fullers Bookshop and at TMAG in Hobart, and in the Devonport Bookshop, Devonport. Prices at these sites may vary from GSA prices, and the member price is not available at these sites either.

## GSA Tasmanian Division Committee

**Chairman Dr Andrew McNeill**  
**Vice Chairman: Matthew Ferguson**

**Secretary: Dr Karin Orth**  
 C/- School of Earth Sciences  
 University of Tasmania  
 Private Bag 79  
 Hobart 7001  
 Tel 03 62261921  
[karin.orth@utas.edu.au](mailto:karin.orth@utas.edu.au)

**Treasurer: Dr Jacqueline Halpin**

**Committee Members:**  
 Rebecca Carey (Membership)  
 Grace Cumming (Geotourism)

Peter McGoldrick  
 Sebastien Meffre  
 Phil Sansom (Education)  
 Michael Vicary (Geotourism)  
 Thomas Schaap (Student Rep)  
 Sian Tooze (Student Rep)

**Geological Society of Australia website:**

[www.gsa.org](http://www.gsa.org)

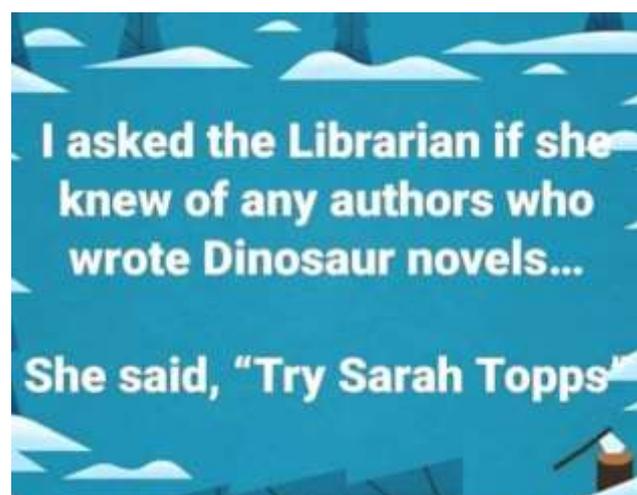
### Other meetings you may be interested in:

**7<sup>th</sup> of May 5:30-6 PM** Joint Meeting of AIG and the Geomatics Society, speaker is Dr Nick Roberts from MRT, 'Radar interferometry and its application potential in Tasmania' For more information and to RSVP contact Colin Mazengarb

[Colin.Mazengarb@stategrowth.tas.gov.au](mailto:Colin.Mazengarb@stategrowth.tas.gov.au) by COB Monday 6<sup>th</sup> of May.

**24<sup>th</sup> of May** Dr John Doherty presents the annual Darcy Lecture for the International Association of Hydrogeologists 'Starting from the Problem and Working Backwards' <https://www.groundwater.org/who/news/10-8-18-doherty-named-2019-darcy-lecturer.html>

And t while we are in the mood for Dinosaurs the final word from Noel Kemp:



Any news, announcements or interesting photographs of Tasmanian Geology you would like to include in the next Newsletter, please send it through via email to [karin.orth@utas.edu.au](mailto:karin.orth@utas.edu.au) prior to the 14th of May 2019.